

We claim:

1           1.     A method of conducting a secure transaction with an on-line service while  
2 offline comprising the steps of issuing a transaction authorization token to a user from an  
3 application server for the on-line service while the user is online; preparing an off-line  
4 transaction object containing data to specify and request the transaction; sending a  
5 message to the on-line service, said message containing the transaction object and the  
6 authorization token; upon receipt of the message, the application server validating the  
7 token to authenticate the user and to authorize the transaction; and executing the  
8 transaction object if the transaction is authorized.

1           2.     The method of claim 1, wherein the token is issued to the user via an e-  
2 mail message sent from the application server.

1           3.     The method of claim 1, wherein the token is issued to the user via a  
2 download operation while the user is on-line.

1           4.     The method of claim 1, wherein the user prepares the transaction object  
2 off-line.

1           5.     The method of claim 1, wherein the on-line service comprises the  
2 application server, and the user requests the token for the transaction from the application  
3 server.

1           6.     The method of claim 5, wherein the application server accesses a database.

2           7.     The method of claim 1, wherein the token comprises a unique identifier  
3     that is generated by the on-line service when the token is issued.

1           8.     The method of claim 1, wherein the token is a one-way encryption of at  
2     least one of an identity of the user, a transaction type, and a data object for which the  
3     transaction is authorized.

1           9.     The method of claim 2, wherein the application server receives an  
2     incoming message including the token, checks the token for validity, and accepts or  
3     rejects the token.

1           10.    The method of claim 9, wherein the message delivering the token and off-  
2     line transaction from the user to the application server is an e-mail message delivered to  
3     the application server via an asynchronous e-mail delivery method.

1           11.    The method of claim 10 where the asynchronous delivery mechanism is  
2     database record synchronization.

1           12.    The method of claim 11 where the asynchronous e-mail delivery method  
2     comprises a synchronization of data between a portable computing device and an on-line  
3     service.

1           13.    The method of claim 1, wherein the token includes data representing a  
2     time period during which the token is valid.

1           14.    The method of claim 1, wherein the token includes data representing a  
2   valid access duration for the token.

1           15.    The method of claim 1, wherein the token specifies an e-mail audit  
2   signature, and said token is valid only if the transaction is sent from an e-mail program  
3   via an e-mail delivery path that matches the e-mail audit signature.

1           16.    The method of Claim 15, wherein an e-mail address to which the message  
2   is sent varies according to an authorized data object and transaction type.

1           17.    The method of claim 1, further comprising encrypting the transaction  
2   object.

1           18.    The method of claim 17, wherein said encrypting comprises issuing a  
2   temporary public key that is a one-way encryption function of an address to which the  
3   transaction is to be sent for encryption of the transaction object.

1           19.    The method of claim 1, wherein the token is contained in a body or a  
2   header of an e-mail message.

1           20.    The method of claim 1, wherein the token and the transaction object are  
2   attachments to an e-mail message.

1           21.     The method of claim 11, wherein the application server ensures that the  
2     token can only be used once, by authorizing a specific transaction by a specific user on  
3     specific data objects.

1           22.     The method of claim 1, wherein the application server is a web-based  
2     application server.

1           23.     The method of claim 1, whereon said transaction is selected from the  
2     group consisting of a database modification, update, adding a file, and editing a file.

1           24.     The method of claim 23 further comprising checking out a file, editing the  
2     file off-line, and checking in the file as an e-mail attachment.

1           25.     The method of claim 1, further comprising authenticating the user with a  
2     password and a network identity while the user is accessing the on-line service.

1           26.     The method of claim 1, wherein the user comprises a software agent that  
2     conducts the transaction on behalf of the user.